PATENT

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IN THE CLAIMS:

Please find below a listing of all of the pending claims. The statuses of the claims are set forth in parentheses.

1. (Currently Amended) A method of selecting input/output (I/O) devices to control power consumption of a computer system, the method comprising:

determining a power consumption metric for each of a plurality of I/O devices connected to the computer system while the plurality of I/O devices are connected to the computer system, wherein the plurality of I/O devices are user interfaces for the computer system and are configured to be used by a user to input information to the computer system or to output information from the computer system to the user;

selecting at least one of the plurality of I/O devices based on the determined power consumption metric; and

reducing power consumption of the at least one selected I/O device.

2. (Original) The method of claim 1, wherein selecting at least one of the plurality of I/O devices comprises:

identifying top power consuming I/O devices of the plurality of I/O devices based on the power consumption metric; and

selecting at least one of the top power consuming I/O devices to reduce power consumption.

3. (Original) The method of claim 2, wherein identifying top power consuming I/O devices of the plurality of I/O devices comprises:

estimating future power consumption for each of the plurality of I/O devices for a period of time in the future; and

selecting a group of the plurality of I/O devices having the highest estimated future power consumptions.

4. (Original) The method of claim 2, further comprising:

identifying low-power I/O device alternatives to using the top power consuming I/O devices.

5. (Original) The method of claim 4, wherein the low-power alternatives comprise at least one of placing a top power consuming I/O device in a low-power mode and disabling a top power consuming I/O device if an I/O device providing substantially the same functionality and consuming less power is available for use.

6. (Original) The method of claim 4, wherein identifying low-power I/O device alternatives comprises:

using a usage model to determine whether any low-power I/O device alternatives to using the top power consuming I/O devices are available, the usage model including a historical analysis of usage for the plurality of I/O devices.

7. (Original) The method of claim 6, wherein the usage model identifies user acceptance of the low-power I/O device alternatives.

8. (Original) The method of claim 4, further comprising:

determining power savings for each of the low-power I/O device alternatives.

9. (Original) The method of claim 8, wherein determining power savings comprises:

estimating a first future power consumption for a top power consuming I/O device operating in a normal mode;

estimating a second future power consumption for a respective low-power I/O device alternative; and

determining a difference between the first and second future power consumptions.

10. (Original) The method of claim 8, wherein selecting at least one of the plurality of I/O devices based on the determined power consumption metric comprises:

selecting at least one of the top power consuming devices based on user acceptance and power savings of a low-power I/O device alternative to the at least one top power consuming I/O device.

11. (Original) The method of claim 10, wherein selecting at least one of the top power consuming devices comprises:

selecting a plurality of the low-power I/O device alternatives associated with the top power consuming I/O devices;

ranking the plurality of low-power I/O device alternatives based user acceptance and power savings for each of the plurality of low-power I/O device alternatives; and

selecting at least one of the plurality of low-power I/O device alternatives based on the ranking.

12. (Original) The method of claim 1, wherein selecting at least one of the plurality of I/O devices comprises selecting at least one of the plurality of I/O devices based on the determined power consumption metric and based on a usage metric for each of the plurality of I/O devices.

13. (Original) The method of claim 12, wherein the power consumption metric comprises at least one of estimated power consumption of the plurality of I/O devices, estimated future power consumption of the plurality of I/O devices, an aggregate of the power consumption of each of the I/O devices, power consumption of the computer system, estimated future power consumption of the computer system, and a power savings for each of the I/O devices if a respective I/O device were placed in a low-power mode.

14. (Original) The method of claim 12, wherein the usage metric comprises a metric associated with user acceptance of placing an I/O device of the plurality of I/O devices in a low-power mode.

15. (Original) The method of claim 1, wherein the power metric comprises an estimated future power consumption and the step of selecting comprises:

determining recent use of each of the plurality of I/O devices;

estimating future power consumption based on the recent use for each of the plurality of I/O devices; and

selecting at least one of the plurality of I/O devices based on the estimated future power consumption.

16. (Original) The method of claim 1, further comprising:

identifying a setting associated with one of the plurality of devices, wherein the setting specifies a constraint on reducing power consumption for the one of the plurality of I/O devices; and

the step of reducing power consumption comprises reducing power consumption of the one of the plurality of I/O devices if the constraint specified in the setting can be maintained.

17. (Original) The method of claim 16, wherein the setting comprises a setting specified by a user.

18. (Original) The method of claim 1, further comprising:

profiling usage of each of the plurality of I/O devices;

generating a usage model from the profiling; and

the step of selecting comprises selecting at least one of the plurality of I/O devices based on the usage model.

19. (Original) The method of claim 18, wherein profiling usage comprises:

analyzing recent usage behavior of at least one of the plurality of I/O devices for a given user.

20. (Original) The method of claim 18, wherein profiling usage comprises:

analyzing past usage behavior of at least one of the plurality of devices for a plurality of users.

21. (Original) The method of claim 1, further comprising:

profiling power consumption of each of the I/O devices;

generating a power model from the profiling; and

the step of selecting comprises selecting at least one of the plurality of I/O devices based on the power model.

22. (Original) The method of claim 1, wherein the power consumption metric comprises at least one of estimated power consumption of the plurality of I/O devices, estimated future power consumption of the plurality of I/O devices, an aggregate of the power consumption of each of the I/O devices, power consumption of the computer system, estimated future power consumption of the computer system, and a power savings for each of the I/O devices if a respective I/O device were placed in a low-power mode.

23. (Currently Amended) A method of controlling power consumption of I/O devices for a computer system, the method comprising:

profiling usage patterns of the I/O devices to establish a usage model, wherein the I/O devices are user interfaces for the computer system and are configured to be used by a user to input information to the computer system or to output information from the computer system to the user;

identifying low-power alternatives to using at least one of the I/O devices using the usage model;

profiling power consumption of the I/O devices to establish a power model;

selecting at least one of the low-power alternatives to reduce power consumption of the computer system based on the power model.

24. (Original) The method of claim 23, wherein the low-power alternatives comprise at least one of placing an I/O device in a low-power mode and disabling an I/O device if another I/O device providing substantially the same functionality and consuming less power can be used.

25. (Original) The method of claim 23, further comprising:

determining whether a power consumption of the computer system or an estimated future power consumption of the computer system exceeds a threshold; and

performing the step of identifying low-power alternatives and the step of selecting at least one of the low-power alternatives in response to the threshold being exceeded.

26. (Currently Amended) An apparatus comprising:

means for identifying a plurality of low-power alternative means to using an I/O device connected to [[the]] a computer system using a usage model; [[and]]

means for selecting at least one of the low-power alternatives means to reduce power consumption of the computer system using a power model;

means for determining whether a power consumption of the computer system or an estimated future power consumption of the computer system exceeds a threshold; and

means for activating the means for identifying a plurality of low-power alternative means and the means for selecting at least one of the low-power alternatives means in response to the threshold being exceeded.

27. (Original) The apparatus of claim 26, wherein the low-power alternative means comprises means for providing substantially the same functionality of the I/O device at reduced power consumption.

28. (Canceled)

29. (Currently Amended) Computer software embedded on a computer readable storage medium, the computer software comprising instructions of:

determining a power consumption metric for each of a plurality of I/O devices connected to a computer system, while the plurality of I/O devices are connected to the computer system, wherein the plurality of I/O devices are user interfaces for the computer system and are configured to be used by a user to input information to the computer system or to output information from the computer system to the user;

selecting at least one of the plurality of I/O devices based on the determined power

consumption metric; and

reducing power consumption of the at least one selected I/O device.

30. (Original) The computer software of claim 29, wherein the instruction of selecting at least one of the plurality of I/O devices comprises instructions of:

identifying top power consuming I/O devices of the plurality of I/O devices based on the power consumption metric; and

selecting at least one of the top power consuming I/O devices to reduce power consumption.

31. (Original) The computer software of claim 30, further comprising an instruction of:

determining whether any low-power I/O device alternatives to using the top power consuming I/O devices are available.

32. (Original) The computer software of claim 31, further comprising an instruction of:

determining power savings for each of the low-power I/O device alternatives.

33. (Original) The computer software of claim 32, wherein the instruction of selecting at least one of the plurality of I/O devices comprises an instruction of:

selecting at least one of the top power consuming devices based on user acceptance and power savings of a low-power I/O device alternative to the at least one top power consuming I/O device.

34. (Currently Amended) A computer system comprising:

a processor; and

a battery, wherein the processor is operable to determine a power consumption metric for each of a plurality of I/O devices connected to the computer system, select at least one of the plurality of I/O devices based on the determined power consumption metric and an estimation of future power consumption based on the power consumption metric for each of the plurality of I/O devices for a period of time in the future, and control the at least one selected I/O device to reduce power consumption in response to remaining battery life falling below a threshold.

35. (Previously Presented) The method of claim 1, wherein each of the I/O devices comprise a piece of hardware, operable to be used in combination with software, providing data to the computer system and/or for receiving data from the computer system.

36. (Previously Presented) The method of claim 35, wherein the I/O devices comprise at least one of a keyboard, a joystick, a mouse, a touch pad and a display.